

Lightweight, Stable Optical Benches in Silicon Carbide and Beryllium, Phase I

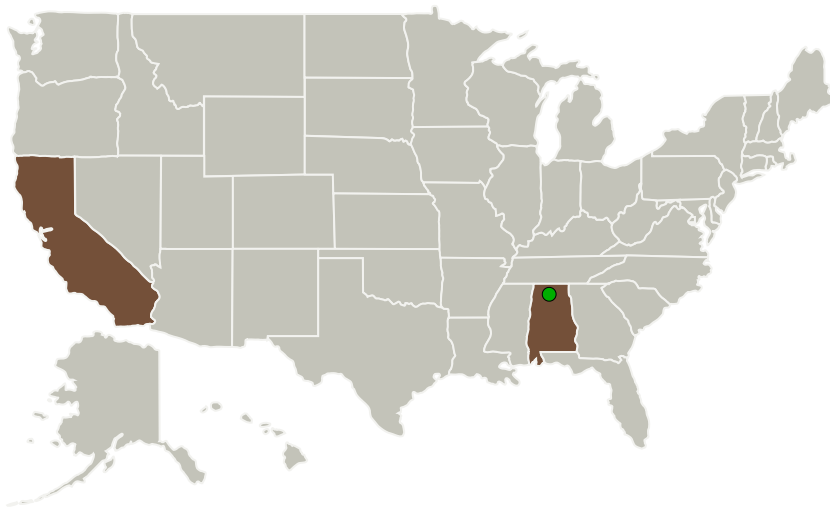
Completed Technology Project (2017 - 2017)



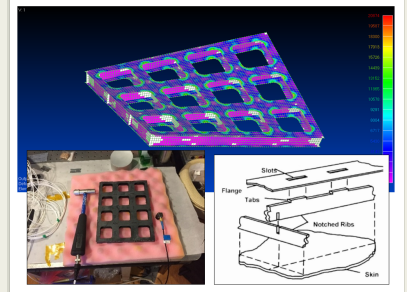
Project Introduction

As the world community, has become aware that exoplanets exist in abundance, it has inspired new observatories in search of Earth-like worlds. Technology development studies have highlighted the need for structures with extraordinary dimensional stability. Advanced materials such as silicon carbide and beryllium are costly and time consuming to manufacture. Using methods pioneered in carbon fiber composites, sandwich panels from silicon carbide and beryllium are proposed for lightweight, stiff, ultra-stable optical benches for instruments on new observatories such as LUVOIR and WFIRST. Assembled from flat stock and waterjet machined, the panels are extremely lightweight. A prototype panel is shown whose stiffness is a close match to the FEA. Fittings machined from Invar 39 for silicon carbide and AlBeMet for beryllium can be bonded to the panels to provide interfaces to optical mounts and optical components.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
CFE Services	Lead Organization	Industry	San Diego, California
● Marshall Space Flight Center (MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama



Lightweight, Stable Optical Benches in Silicon Carbide and Beryllium, Phase I Briefing Chart Image

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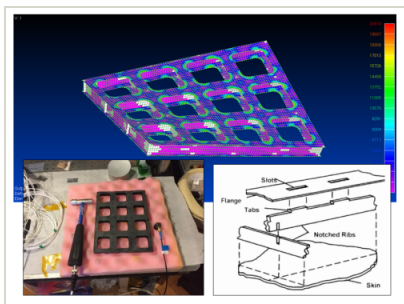


Primary U.S. Work Locations

Alabama

California

Images



Briefing Chart Image

Lightweight, Stable Optical Benches in Silicon Carbide and Beryllium, Phase I Briefing Chart Image (<https://techport.nasa.gov/image/126891>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

CFE Services

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

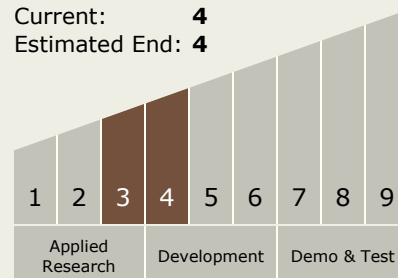
Carlos Torrez

Principal Investigator:

Leslie Catanzaro

Technology Maturity (TRL)

Start: 3
Current: 4
Estimated End: 4



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System